REMARKS

Allowable Subject Matter

Claims 33-35, 38 and 48 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Rejoinder of Method Claims

In the June 15, 2004 Office Action, the Examiner imposed a restriction requirement against claims 1-49, and required that an election be made between:

Group I: Claims 1-31 and 49, drawn to a method of forming a nitride, classified in class 438, subclass 758; and

Group II: Claims 32-48, drawn to a precursor, classified in class 524, subclass 86.

Applicants elected Group II claims 32-48 and request that when the product claims 32 to 48 are found allowable, all claims that recite a method of making or using the product be rejoined and be examined under the provisions of MPEP §821.04. Such rejoinder would be fully proper under these circumstances because when the product claim is found allowable, applicant may present claims directed to the process of making and/or using the patentable product for examination through the rejoinder procedure in accordance with MPEP §821.04, provided that the process claims depend from or include all the limitations of the allowed product claims. In the present application, the elected claims 32-48 are directed to a metalorganic precursor and claims 1-31 are directed to a process for using such precursor $(R_1R_2N)_{a-b}MX_b$. Thus, consistent with the provisions of the MPEP §821.04, when the product claims 32-48 are found allowable, the withdrawn method of use claims 1-31 may be rejoined for examination.

Rejections of Claims and Traversal Thereof

In the September 22, 2004 Office Action, claims 32, 37, 39, 42-43, 45 and 47 were rejected under 35 U.S.C. §102(b) as being anticipated by Kron, et al. (U.S. Patent Application Publication No:

2002/0081385). Applicants respectfully traverse this rejection and submit that the presently claimed invention is not anticipated by the cited reference.

According to the Office:

> "Kron et al. disclose a metalorganic precursor formula comprising R'SiX wherein R' comprises an organic group such as alkyl, alkenyl etc....having NR''' groups therein where R'' comprises a hydrogen or an organic group, and wherein X may be a halogen. (See[0011]-[016]) The composition may further comprise an aluminum source reagent such as an alkylalane or a haloalane. ([0019]-[0021]) Because Kron et al discloses the interchangeability of the species it would have been obvious to one with ordinary skill in the art to arrive at such compounds since it has been held that the use of conventional materials to perform their known functions in a conventional process is obvious . . . ."

Applicants vigorously disagree. Initially, it should be noted that applicants' claimed invention is as follows:

32. A metalorganic precursor of formula (I):

$$(R_1R_2N)_{a-b}MX_b \qquad (I)$$

wherein:

M is selected from the group of Ta, Ti, W, Nb, Si, Al and B;

a is a number equal to the valence of M;

$1 \leq b \leq (a-1)$, with the proviso, that when M is Si, then b is 1 or 2;

R_1 and R_2 can be the same as or different from one another, and are each independently selected from the group of H, C_1-C_4 alkyl, C_3-C_6 cycloalkyl, and $R^0{}_3Si$, where each R^0 can be the same or different and each R^0 is independently selected from H and C_1-C_4 alkyl; and

X is selected from the group of chlorine, fluorine, bromine and iodine.

Clearly, claim 32 states that "**a is equal to the valence of the Metal M,**" and as such, **b = "valence of M-1.**" Further, the presently claimed invention includes the limitation that if the **Metal (M) is Si then b is equal to 1 or 2** (support for this limitation is found in the examples set forth in paragraph [0026]). Thus, applicants' claimed invention includes limitations that are not described, taught or suggested in the cited reference.

Formula (I) has three specific and expressed limitations:

a = valence of M (VM);
b = (a-1) = (VM - 1); and
when M is Si, then b is 1 or 2

and these limitations clearly define applicants' compounds and none of applicants' compounds are defined or included in the cited reference. Thus, if M is Si, the present invention recites precursors having the formulas:

when b = 1, then the formula is $(R_1R_2N)_3SiX_1$

when b = 2, then the formula is $(R_1R_2N)_2SiX_2$

The Office contends that the Kron, et al reference anticipates or make obvious applicants' compound by referring to the formula "R'SiX wherein R' comprises an organic group such as alkyl, alkenyl etc....having NR''' groups therein where R'' comprises a hydrogen or an organic group, and wherein X may be a halogen." However, the office has selectively chosen only a select section of text and seems to have overlooked the fact that the reference clearly states that:

> "Residues R' can be **interrupted** by O and/or by S and/or by the group NR" and can have one or more substituents . . ." (emphasis added)

Thus, this additional functional NR" group that separates or interrupts the "Si" metal from the R' group provides for a compound having the formula R'_m NR''SiX(4-m) which is very different from applicants' claimed compounds, as described above. It should be noted that that NR" does not replace R'_m in the cited reference but instead is added to the compound and separates the R'_m moiety from the SiX(4-m) moiety. Clearly, all of applicants' silicon-nitride compounds comprise at least two nitrogen atoms because of the limitation that when the metal is silicon, "b" has to be 1 or 2.

The Office further states that "the composition may further comprise an aluminum source reagent such as an alkylalane or a haloalane. ([0019]-[0021])." However, it should be noted that the Kron, et al compositions include three separate components, that being (a), (b) and (c) and the text that the Office is making reference to is from component (b) having a formula of AlR_3. Thus, the Office seems to be taking a metal defined for use with component (b) and suggesting that it can be introduced into

component (a). However, anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, ***arranged as in the claim.*** *Lindermann Maschinenfabrik GMBH v. American Hoist and Derrick Co.*, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984) (emphasis added). The Kron et al. reference does not meet this standard.

It is important to recognize that the first component (a) of the Kron et al. compositions must be a silicon-containing compound. The second component may include Al, Zr or Ti but that is all and there is no teaching or suggestion of replacing the Si of component (a) with the Al of component (b). Further, the Office may not speculate about this proposed replacement, especially because this proposed modification would leave the Kron et al composition without a silane compound and the cited reference relates to only silane coatings. It is well settled in the law that if a proposed modification renders the prior art invention unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon,* 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

To anticipate a claim or render it obvious, a reference must be enabling. This point was recently reaffirmed in an April 7, 2000 decision of the Court of Appeals for the Federal Circuit (CAFC).[1] Citing *In re Paulsen*,[2] the court stated that to be anticipating, a prior art reference must:

1) disclose each and every limitation of the claimed invention;

2) be enabling; and

3) describe the claimed invention sufficiently to place it in possession of a person of ordinary skill in the field of the invention.

Clearly, the Kron et al. reference does not meet this standard. According to the Office, "the Kron et al discloses the interchangeability of the species and it would have been obvious to one with ordinary skill in the art to arrive at such compounds since it has been held that the use of conventional materials to perform their known functions in a conventional process is obvious . . . ." However, the Office has not provided any evidence on how a person of ordinary skill in the art would read the cited reference and be directed to the presently claimed compounds. Clearly, the Kron et al. reference has not "identically

[1] *Helifix Ltd. v. Blok-Lok, Ltd.*, 54 USPQ2d 1299 (Fed. Cir. 2000).
[2] *In re Paulsen*, 31 U.S.P.Q.2d 1671, 1673 (Fed. Cir. 1994).

disclosed or described" the presently claimed invention as required of an anticipatory reference applied under section 102. (See *In re Felton*, 179 USPQ 295 (CCPA 1973))

Thus, because Kron et al. does not disclose every limitation of applicants' claimed invention, Kron et al. does not anticipate not render obvious applicants' claimed invention. Accordingly, applicants respectfully request withdrawal of the rejection of claims 32-48. under 35 U.S.C. §102(b).

CONCLUSION

Applicants have satisfied the requirements for patentability. All pending claims are free of the art and fully comply with the requirements of 35 U.S.C. §102 and §103. It therefore is requested that Examiner Rocchegiani reconsider the patentability of the pending claims in light of the distinguishing remarks herein, and withdraw all rejections, thereby placing the application in condition for allowance. Notice of the same is earnestly solicited. In the event that any issues remain, Examiner Rocchegiani is requested to contact the undersigned attorney at (919) 419-9350 to resolve same.

Respectfully submitted,

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